



SERO-PREVALENCE OF HIV INFECTION IN CHILDREN ATTENDING SOME SELECTED HOSPITALS IN KANO METROPOLIS, NORTHERN NIGERIA

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ABSTRACT

As the HIV pandemic continues to ravage every aspect of humanity, there is a need to document its prevalence in various health centers situated in Kano. This six-month study reports on the sero-prevalence of HIV infection among children less than 15 years of age but above 18 months attending Murtala Muhammad Specialist Hospitals (MMSH), Infectious Diseases Hospital (IDH) and Hasiya Bayero Pediatric Hospital (HBPH) Kano. The voluntary counseling and testing (VCT) of the children of the abovementioned age group was conducted at the VCT sites of MMSH, IDH and HBPH. Simple/rapid testing method was employed in the research and conducted in accordance with WHO's recommended assays. Out of the 317 children counseled, only 276 (87%) decided to be tested for HIV. Results obtained from the work show that 4% of the tested children were positive. The prevalence of HIV with respect to sex and age of the subject involved in this study was higher in males and 1.5 – 5.0 years age group respectively.

Keywords: Sero-prevalence, HIV, Infection, Children, Hospitals, Kano metropolis

INTRODUCTION

Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome (HIV/AIDS) is a global development threat with children being the most vulnerable group in the spread of the pandemic. Out of the 40.3 million HIV/AIDS infected persons worldwide, 15 million were either orphaned or become vulnerable to the AIDS pandemic (Alhagie, 2007). AIDS has been a focus of international concern for more than two decades now. Yet its impact on children has been little considered. The numbers of children affected were not even counted until recently. One of the first global estimates of the numbers of children, who had lost one or both parents to HIV/AIDS, appeared in 1997. In September 2003, 39 per cent of countries with generalized epidemics still had no national policy to provide essential support to children orphaned or made vulnerable by HIV/AIDS (United Nations Children's Fund, 2006).

Children under 15 years account for 1 in every 6 global AIDS-related deaths, but they are rarely mentioned in global surveys of the pandemic (Anon, 2006). For too long, children have been the missing face in the HIV and AIDS response and their needs are often being overlooked. Yet, they are the ones who offer the greatest hope for defeating the epidemic (UNICEF, 2006). 12 million of the 48 million orphans in sub-Saharan Africa have lost one or both parents to AIDS (Dan, 2006). Nine out of ten children with HIV or AIDS are Africans. Sub-Saharan Africa is the worst affected region in the world (Dibu, 2007). Nigeria now has the third largest population of People Living with HIV/AIDS (PLWHA) in the world. There are already 1.8 million children orphaned by AIDS in

Nigeria (Nwosu, 2005). According to the 2005 technical report on HIV released by the Federal Ministry of Health, about 73,550 children were infected with HIV/AIDS in 2005 largely due to mother-to-child transmission. The report puts the total number of children living with HIV/AIDS in the country to be about 238,000 (Anon, 2006). According to HIV/AIDS estimates based on the 2005 HIV sero-prevalence survey, Kano state has prevalence of 3.4%. The estimate puts the total number of people infected with HIV in the state to be 149,800, while number of newly infected persons in 2005 was 16,800. The number of deaths due to AIDS in 2005 was said to be 12,100 and that of AIDS orphans in the same year was estimated as 47,700 (State Action Committee on AIDS Kano, 2006).

MATERIALS AND METHODS

Study Area

Kano city lies between latitude 11° 55' and 12° 01' North and longitude 8° 29' and 8° 33' East. It is a commercial center and visited by many from different part of Nigeria and the world in general hence the relevance of choosing Kano as this study site.

Study Site and Subjects

The sites for the current study were: Hasiya Bayero Pediatric Hospital (HBPH), Murtala Muhammad Specialist Hospital (MMSH) and Infectious Disease Hospital (IDH), all situated within Kano metropolitan.

1. Hasiya Bayero pediatric Hospital is the biggest and well equipped (in terms of personnel and facilities) hospital for pediatrics in Kano State

2. Murtala Muhammad Specialist Hospital is the biggest and most patronized general hospital not only in Kano but in whole of Sub Saharan Africa (Murtala Mohammed Specialist Hospital, 2004) and it has Voluntary Counselling and Testing (VCT) site which is one of the sites used in this research. It also has Prevention of Mother to Child Transmission (PMTCT) site.

3. Infectious Diseases Hospital (IDH) was chosen as one of the centers for this research because it is the only Hospital catering for infectious diseases in Kano. Most of the patients tested **HIV** positive (by diagnostic testing method) in other hospitals are referred to this hospital for further counseling, care and treatment.

The study group includes both in-patients and out-patients belonging to the age groups 1.5 - < 15 years. The study was carried out between March and October, 2005.

Voluntary Counselling and Testing (VCT)

Voluntary Counseling and Testing (VCT) was conducted at MMSH and IDH VCT centers in accordance with the Federal Ministry of Health's guidelines. The counselors met with the parents or guardians and sometimes with the child where possible, taking into consideration the child's age and level of understanding. The counseling enabled the parents, guardians or children to make an informed decision or choice about being tested. They were also assured of the confidentiality of the process (Federal Ministry of Health, 2003). The VCT forms were administered to 317 respondents, out of which 276 were voluntarily counselled and tested while 41 decided to be only counselled.

Sero-Prevalence Studies: HIV Testing

The process of HIV testing adopted in this research was the rapid testing method which was in accordance with the WHO's recommended assays (Family Health International, 2003).

HIV-Testing Kits

Based on WHO recommended assays, three different kits were used in this research (WHO, 1998), names; Capillus, Genie II and Determine kits for first, second and sometimes third **HIV** testing respectively.

After testing with capillus kits, all samples tested negative were reported as negative, while those tested positive were subjected to a second test with Genie II kits for confirmation. The samples that tested positive by the second test were reported as positive. Moreover, the samples that tested negative by second test but positive by the first test were subjected to the third test with Determine kits, a step commonly referred to as tie breaker.

Test Procedure

Whole blood samples were used in the research. The test procedure was conducted in conformity with the manufacturers' instructions. The kits required no other reagents or equipment. Accordingly, all the rapid

tests kits used, share the same principles of simple agglutination.

Whole blood sample (0.5-1.0ml) was dropped directly from the fingertip of the subject into a clean test tube. The latex reagent was mixed well by gently agitating the bottle to ensure that the latex suspension was homogenous. Also latex was drawn up and down a few times with graduated dropper to ensure good mixing before latex was dispensed onto the slide. The latex reagent was drawn to the calibration mark (120 ul volume approx). The reagent was dispensed onto the slide at the edge of the mixing well furthest away from the capillary channel as in figure 2 above. Contact of the graduated dropper with the slide was avoided when dispensing the reagent. Using the precalibrated pipette, a fresh disposable pipette tip provided in the kit was attached and the test sample was retrieved (10 ul Volume). The sample was dispensed directly into the latex solution using the pipette, the sample and the latex were mixed by pumping the mixture in and out of the tip three times and stirred in a circular motion at least 5 times. The pipette tip was used to move the well mixed sample and latex solution to the opening of the channel until the beginning of the capillary flow. The latex mixture was allowed to flow through the entire capillary channel and into the viewing window before interpretation of the result.

RESULTS

A total of 317 caregivers comprising 218 females (68.8%) and 99 males (31.2%) attended VCT sites with their wards. Table 1 showed the summary of attendance at the 2 VCT sites used in this study. The attendance was higher at MMSH where 258 (81.4%) of the subjects were present than at IDH which recorded only 59 (18.6%) attendance. Table 2 showed the summary of the features of the children brought for VCT. A total of 317 children registered for VCT and 180 (56.8%) were males and 137 (43.2%) were females. Their ages ranged from 1.5 to less than 15 years. Although 317 children participated in the VCT, only 276 (87%) were tested, of these 11 children (3.5%) tested positive for HIV. With regards to the level of education of the children, 111 (35%) had no any educational background, 146 (46%) were at nursery/primary school level. Only 11 (3.6%) were attending Qur'anic (Islamiyya) schools while 44 (13.8%) were almajirai (pupils) and 5 (1.5%) did not respond to the question. Table 3 shows the prevalence of HIV infection in relation to educational level of the children studied where out of 146 children in nursery and primary schools 4 (1.3%) were infected. Out of the 44 almajiris examined, 2 (4.6%) were also infected. The rate of infection was relatively high among those children that had never been to school or were yet to get enrolled into any school with 4 (3.6%) infected subjects out of 111 examined. The children attending Qur'anic / Islamiyya schools had the least number of infection but had highest percentage of the number infected as only 1 (9%) out of 11 subjects was infected.

Table 4 shows the age and sex distribution of the children infected with the disease in this study, out of 156 males examined 5 were infected and 3 out of the infected 5 were of age group 6 – 10 years. Among the female participants, 120 were examined out of which 6 were infected. 5 of the infected 6 were of age group 1.5 – 5 years.

Table 1: Summary of the attendance at the two VCT sites used in the research

VCT sites	No. examined	Percentage (%)
MMSH	258	81.5
IDH	59	18.5
Total	317	100

Table 2: Results of HIV sero-status

	No. of patients	Percentage (%)
Positive	11	3.47
Negative	265	83.60
Not tested	41	12.93
Total	317	100.0

Table 3: Results of HIV sero-status on the basis of sex

Sex	No. examined	No. positive	Percentage (%)
Males	180	5	1.58
Females	137	6	1.89
Total	317	11	3.47

Table 4: Results of HIV sero-status on the basis of educational background

Level	No. examined	No. positive	Percentage (%)
Nursery/primary	146	4	1.26
Qur'anic/Islamiyya	11	1	0.32
Almajiri	44	2	0.63
None	111	4	1.26
No response	5	0	0.0
Total	317	11	3.47

Table 5: Results of HIV sero-status on the basis of age

Age (years)	No. examined	No. positive	Percentage (%)
1.5 – 5	167	6	2.17
6 – 10	55	3	1.09
11 – 15	54	2	0.72
Total	276	11	3.98

DISCUSSION

The sero-prevalence of HIV infection among the tested children was 4%, a value higher than that reported by Thomas (2001) and Park (2000), where children under 15 years made up prevalence of less than 3% of all cases. The present value is almost consistent with the results of other researches conducted in some parts of Africa (UNICEF, 2006). For example, the most recent estimates from the Actuarial Society of South Africa (ASSA) revealed that the HIV-prevalence rate in the 0 – 5-year age group increased from 2.2% in 2000 to 3.6% in 2006 (Dorrington *et al.*, 2004). The figure obtained in this study was also high because the research was hospital based and some of the children brought for VCT during Anti Retro Virals (ARVs) programme were pale and already had features suggestive of HIV infection. The present study provides some quantitative information about the likely route of HIV transmission among the infected children. Information from the questionnaire revealed that sexual abuse was the highest predisposing factor with 42.9% of the children exposed HIV infection. Other risk factors that were of significance included homelessness which rendered almost 5% of those exposed were infected. 276 children were traditionally circumcised out of which 6 (2.2%) were infected. The

prevalence of HIV infection in relation to educational level of the children studied shows that out of 146 children in nursery and primary schools 4 (2.7%) were infected. Out of the 44 almajiris examined, 2 (4.6%) were also infected. The rate of infection was also high among those children that had never been to school or were yet to get enrolled into any school with 4 (3.6%) infected subjects out of 111 examined. With regards to the age and sex distribution of the children infected with the disease in this study, out of 156 males examined 5 were infected and 3 out of the infected 5 were of age group 6 – 10 years. Among the female participants, 120 were examined out of which 6 were infected. 5 of the infected 6 were of age group 1.5 – 5 years. The higher number of males (57%) compared to females (43%) observed in this study may be linked to the large number of almajirai (pupils) brought for the VCT.

CONCLUSION

The study showed 4% sero-prevalence of HIV infection among randomly selected children less than 15 years but above 18 months attending some selected hospitals in Kano with infection rate being higher in males and children within the age group of 1.5-5.0 years.

RECOMMENDATIONS

A holistic approach is needed for the control of AIDS in Kano. Socio-economic factors that predispose children to HIV infection such as poverty, sexual abuse, homelessness and unhealthy traditional practices such as traditional circumcision should be eliminated.

- Sound moral teachings are needed both at schools and homes.

- Delivery of accurate knowledge of HIV by supportive supervision and monitoring of providers is also important.

- Parent-child communication about HIV/AIDS and sexuality should start early so that it can evolve comfortably as the child matures and hence perform their expected parental roles.

- Advocacy and education of political, religious, community leaders and parents on HIV/AIDS through civil society and community-based programmes are important in redefining social norms.

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